2024

Technical Report

Assessment of Clinical Judgement (ACJ®)

NDEB® BNED

Content

Introduction

Organizations who administer high-stakes examinations must be concerned with validity, reliability, and fairness because these measures are required in making pass/fail decisions affecting candidates for licensure or certification. Fairness to candidates and protection of the public are the foremost concerns for the NDEB, and the NDEB has an obligation to provide the highest quality examination program possible.

This Technical Report is a summary of the processes followed by the NDEB to develop, administer, and score the Assessment of Clinical Judgement (ACJ) administered in 2024. It provides a summary of the information needed to support the validity and reliability of the ACJ. For additional information, key references are included in Appendix A. Any background information is included to assist in understanding the development of the NDEB's examination processes.

This report serves as a reference for the members of the NDEB Examinations Committee, NDEB Board, and Provincial Dental Regulatory Authorities (DRAs). The processes described in this report may differ from those used in other years.

Background

The NDEB Equivalency Process was established in 2011 at the request of the Canadian Dental Regulatory Authorities Federation (CDRAF) to provide an alternative pathway toward licensure for dentists trained in non-accredited dental programs. At that time, the only existing pathway was the completion of a Qualifying Program (QP) at selected Faculties of Dentistry across Canada. QPs were established in 1997-1998 and were originally intended to be 22-month non-degree programs. Over time, they were all converted to degree completion programs of a 2.5 or 3 year duration, and the number of positions available across Canada per year never exceeded one hundred.

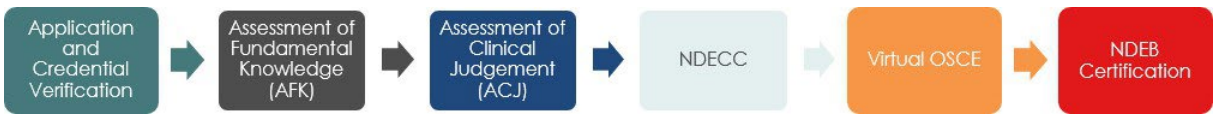
In Canada, the Commission on Dental Accreditation of Canada (CDAC) is the organization responsible for accrediting dental education programs. CDAC develops and maintains national accreditation requirements for educational programs and evaluates programs using defined processes. The general dentistry programs accredited by CDAC, the American Dental Association's Commission on Dental Accreditation (CODA), the Australian Dental Council (ADC), the Dental Council of New Zealand (DCNZ) and the Irish Dental Council are considered accredited.

Graduates of accredited programs have undergone a dental education program that demonstrably met the requirements of the CDAC. In contrast, graduates of non-accredited programs have undergone dental education programs that have not demonstrably met the requirements of the CDAC. Dental education and clinical experience vary widely around the world. Non-accredited programs may differ from accredited programs in terms of the scope of the programs, clinical experience, the evaluation of students, etc.

The purpose of the three examinations of the NDEB Equivalency Process is to verify that graduates of non-accredited programs are equivalent to graduates of accredited programs prior to allowing them to pursue the certification examination.

The following diagram illustrates the Equivalency Process pathway for a graduate of a non-accredited dental program to obtain NDEB certification.

Entry to Practice: Graduates of Non-Accredited Dental Programs[1]



[1] *The Virtual OSCE replaced the Written Examination and OSCE in 2023.*

Part A – Exam Development

Purpose and Format of the ACJ

The purpose of the ACJ is to assess the candidate's ability to formulate a diagnosis, make clinical decisions, and to evaluate the candidate's knowledge in oral radiology, including the ability to make a radiographic interpretation and diagnosis.

The ACJ is a computer-based test consisting of 150 single and multi-answer multiple-choice questions given in a five-hour session. There is one scheduled break during the examination. Questions may include patient histories, dental charts, and radiographs and photographs of patients of all ages. There are standalone questions and questions that are grouped into cases. The cases are interspersed throughout the standalone questions.

Blueprint

The blueprint below shows the content areas and approximate percentage of questions in each area.

Table 1: ACJ Blueprint

Content Area	Approximate % of Questions
Pharmacotherapeutics, Medically-Complex Patients, Medical Emergencies, Geriatrics, Local Anesthesia	22
Oral Medicine/Oral Pathology, Oral Surgery	28
Periodontics	15
Endodontics	10
Orthodontics, Pediatric Dentistry	10
Cariology/Restorative Dentistry	15
Total	**100%**

Test Construction Process and Validity Evidence

The examination development process follows the NDEB's development plan used to support the creation of defensible examination content. Specific elements of that plan are detailed below.

Examination Content

Examiners who are subject matter experts were sent copies of the Examiner's Manual and other preparatory material for review. Prior to a question development workshop, examiners used the aforementioned information to construct new content items and submitted them to the NDEB. During the workshop, examiners were trained in question construction, then they reviewed, and edited these new items. Examiners were directed to write items that assessed higher cognitive processes such as application and problem-solving. They were further instructed to avoid trivial questions and avoid recall questions whenever possible. In addition, all new items were reviewed and, if required, edited by the Chief Examiner and senior staff.

ACJ items are stored in a third-party software platform. The software platform is also used for exam creation.

Item Selection

The Chief Examiner, the Assistant Chief Examiner and at least one additional experienced examiner began the process for the creation of each exam by doing a preliminary review of the item bank and chose questions to be considered for the preselection undertaking. Items were chosen based on several criteria including consistency with the blueprint, taxonomy of cognitive levels and statistical properties of the items. The total number of questions chosen in this preliminary preselection approximated 1.3 times more than those that were ultimately required.

The next stage involved a different group of examiners preselecting the items from this set of questions to reduce the total number being considered for selection, again in accordance with the blueprint and past item analyses.

Examiners who are general practitioners selected the final items for every examination in accordance with the blueprint. At least one examiner was a member of the Ordre des dentistes du Québec (ODQ). The results of past item analyses are used as a guide in the item selection process. Items are selected based on several criteria including consistency with the blueprint, taxonomy of cognitive levels, the need for common items, and statistical properties of the items.

Translation

After test items have been selected, they were translated using a multi-stage process by dentists familiar with the vocabulary used on the NDEB examinations. All examinations are available in both official languages. This includes all exam forms and preparation materials. The questions and the translations were reviewed by a group which included bilingual subject matter experts who are approved by the Ordre des dentistes du Québec (ODQ). In addition, the NDEB has developed a detailed glossary of translated terms. This glossary is updated annually. This process ensures that candidates writing in either official language have equal opportunity to demonstrate their competence. The translation process ensures consistency between English and French versions of the questions.

Item Review, Verification, and Production

Following the selection, an exam form was built in preparation for review. A first version of the examination was reviewed and validated by examiners who verified the technical accuracy of the items. Examiners reviewed the English version of the examination and French translation side-by-side to ensure they were accurate. This included identifying item enemies which are items of similar content that should not be on the same exam and verifying the representativeness of the content domain and the significance of the content being tested. During this review, questions were subjected to intensive analysis to verify the wording and the correct answer. If a question needed to be reworded, it was either revised for the examination or replaced. The review focused on three areas. First, the technical content of the question was verified to ensure that it was consistent with acceptable practices and supported by the literature. Second, a sensitivity review was done to ensure that the question content is not offensive and does not discriminate against candidate subgroups. Third, a language review was done to ensure that the content does not exceed the language level needed to practice dentistry safely and effectively in Canada. Examiners may consult with additional subject matter experts when required. This form was reviewed on the same monitors as those available for candidates at test centres. The layout of the questions and the quality of the images were verified. All required changes were made, and a second version of the examination was published.

Subsequently, the Chief Examiner, Assistant Chief Examiner and other examiners performed a final review in the exam format, with questions randomized. Various information screens are added to this version, and the exam settings are activated. The first screen consisted of information on the number of sections, time allowed per section, and break. The second screen was a non-disclosure agreement, which candidates must accept to continue. There were instruction screens before each part of the exam, and a break screen between parts.

Any issues found were corrected immediately and another version of the exam was published and reviewed, if required.

When finalized, a PDF of the examination was also created as a backup for delivery. To create the PDF, NDEB staff combined all questions into a single PDF document and created bookmarks for each question. Specific instructions were added at the beginning of the document

indicating the total number of questions and any additional instructions required for a candidate to complete the exam. The final PDF version was reviewed by the Chief Examiner, NDEB staff and the Director of Examinations.

Before the examination was administered, technical testing took place at a third-party run site. NDEB staff ensured that the exam functioned as expected and that the various tools provided in the examination software were working. In addition, for the NDEB-run test centre, NDEB staff along with the third-party provider ensured the laptops were set up correctly, WIFI was working properly, and any other technical set up was in place the day before the exam was administered.

Staff Support

The following is a summary of the roles involved in the NDEB's test construction and production processes.

Chief Examiner/Assistant Chief Examiner

The Chief Examiner is responsible for the development of the examination including coordination of question development, question selection, monitoring the item bank and results within the guidelines and parameters established by the NDEB as stipulated in the protocol.

Executive Director and Registrar

The Executive Director and Registrar is responsible for staff supervision and the implementation of all policies approved by the Board to ensure the processes operate efficiently and effectively.

NDEB Staff

The Director of Examinations is responsible for the oversight of the examinations department. The Director of Examinations and NDEB staff manage the operational delivery of the examinations. This includes corresponding with examiners, developing administration instructions, production and translation of the examinations, maintenance of the question banks, and arrangements with host institutions and third-party test centres.

Staff is responsible for carrying out directives from the Examinations Committee as approved by the Board.

Test Validity and Reliability

Validity

The primary purpose of establishing content validity of credentialing examinations is to show that the process and results underlying their development are a valid reflection of that part of

professional competence that the examinations purport to assess. That is, construct validity is about the relationships between the construct of professional competence and the examination instruments. The examination content categories reflect both educational programs and the requirements of practice, and general practitioners select the content for the examinations. In addition, each form is built to match the blueprint approved annually by the Board and contained in the protocols.

Reliability

Test reliability refers to the degree to which examination scores for a group of candidates are consistent over repeated administrations of the test and are therefore considered to be dependable and consistent for an individual candidate. Reliability is estimated using a reliability coefficient, which is a unit-free indicator that reflects the degree to which scores are free of random measurement error. Based on the data provided in the results section of this Technical Report, the NDEB examinations display evidence of continued strong reliability.

Documentation

Evidence of test validity is collected through multiple means, one of which is the documentation of development and administration procedures. The NDEB makes these documents publicly available. Only confidential material or material that could jeopardize the integrity of the examination is retained internally. These documents are also updated frequently (generally on an annual basis) to reflect the most recent information. References for these documents can be found in Appendix A.

To support the various sources of validity and reliability evidence, NDEB produces the following documents:

NDEB By-laws

The NDEB By-laws contain sections related to the NDEB's examination programs. Examples of relevant information include:

- Certification eligibility
- the Board's certification and equivalency processes
- Examinations
- Misconduct and appeals policies
- Terms of Reference for various examination-related committees
- Test accommodations

The By-laws are available on NDEB's website (www.ndeb-bned.ca).

The NDEB Knowledge Skills and Abilities for the Entry-Level Dentist in Canada (NDEB KSAs) (Appendix B)

In 2015, the NDEB undertook the development of the KSAs required for entry-level dentists in Canada. The KSAs were validated through a practice analysis survey of Canadian dentists and led to the development of blueprints for the Virtual OSCE and NDECC and revision of the blueprints for the AFK and ACJ. The KSAs identify the body of knowledge that is assessed by NDEB's examinations. A clearly outlined body of knowledge is key to establishing the content validity of examinations by providing a link between practice and the examination. The alignment between the KSAs and the competencies of the ACFD can be reviewed in the ACFD Educational Framework for the Development of Competency in Dental Programs.

Assessment of Clinical Judgement (ACJ) Protocol

Updated annually, the ACJ Protocol contains the information the candidate needs to prepare to take the ACJ. In addition to providing logistical information for the candidate, this document is meant to reduce construct-irrelevant variance related to testing. The document details the purpose and intended use of the examination. Candidates acquire advance information on examination content, instructions, and other procedures. At a high level, the ACJ Protocol contains the following information:

- Check-in procedures
- Content and format
- Sample questions
- Reference texts
- Examination regulations
- Misconduct
- Passing standard
- Results
- Appeals and rescores
- Repeats

This document is available in English and French on NDEB's website (www.ndeb-bned.ca).

ACJ Question and Answer Document

The ACJ Sample questions and answer document provides examples of the formats commonly used in the ACJ. Candidates are strongly encouraged to view this copyrighted document in preparation for the ACJ.

This document is available in English and French on the Exam Resources section of the NDEB website (www.ndeb-bned.ca).

Examiner's Manual - ACJ

Reviewed and updated as required, the examiner's manual for the ACJ is an internal document that describes the question writing and selection philosophy, the standard ACJ formats, and various question styles.

Instructions for Proctors at Third-Party Test Centres

The NDEB has developed standard administration procedures for each of the examinations. These procedures were communicated to the third-party delivering the examinations and were included in a document called Client Practices made available to all proctors. The document contains uniform directions for proctors such as the schedule for the examination and security protocols that should be undertaken during the examination. This document ensures that candidates have a similar experience when completing the examination, regardless of where they write. Client Practices are reviewed on a regular basis and as required.

Instructions for Invigilators at NDEB-Run Test Centre

Prior to the administration, invigilators reviewed any new NDEB policies or procedures in relation to the administration of the examination.

All invigilators were required to adhere to the NDEB's instructions and regulations. These documents clearly outline the responsibility of the invigilators and examination day procedures allowing for standardized administration across all centres. Invigilators were encouraged to communicate with NDEB staff with questions or concerns regarding the administration or their responsibilities.

A powerpoint presentation was provided to invigilators prior to the examination administration. A binder containing multiple documents pertaining to examination day was also provided to Chief Invigilators. The purpose of the documents and powerpoint were to describe, in detail, the procedures to follow before, during and after the administration of the ACJ. This ensured that candidates had a similar experience when completing the examination, regardless of where they took the exam. This also enhanced security by providing a detailed quality assurance protocol.

The presentation contained:

- instructions prior to the examination
- instructions for examination day (which includes verbal instructions)
- procedures to follow during the administration of the examination
- procedures to follow at the end of the examination
- instructions following the examination

Part B – Administration

Locations and Procedures

The ACJ is normally administered two times a year in electronic format. In 2024, the examinations were administered at:

1. Third-party test centres across and outside of Canada. There are multiple types of test centres owned or operated by our third party.

2. NDEB-run test centre, using a large venue in Ottawa. The NDEB contracts a third party to provide laptops and other technology required to deliver the examination.

Measures were taken to administer the examination in a distraction-free and comfortable environment where candidates could demonstrate their competence.

Examination locations and number of candidates for the May 2024 and November 2024 examinations are shown in Table 2.

Table 2: 2024 ACJ locations and candidate numbers

Locations	May 2024	November 2024
Prometric test centres in Canada	373	296
Prometric test centres in USA	40	16
Prometric test centres in Australia and New Zealand	19	24
Ottawa, ON	143	96
Total	**575**	**432**

Candidate Orientation

Detailed information regarding the ACJ is provided on the NDEB website. This includes test format, examination protocol, registration information and fees. After registering for the exam, candidates are provided additional site-specific exam information. An electronic examination orientation is also available on the NDEB website.

Third-Party Test Centres

Standard check-in procedures were in place for all candidates at each third-party test centre. Candidates were reminded of the rules of conduct. No variation from the examination administration was allowed unless a test accommodation had been granted by the NDEB.

NDEB-Run Test Centre

Standard check-in procedures were in place for all candidates at the NDEB-run test centre. A set of standardized instructions was read to all candidates in their language of choice prior to the commencement of the examination. Candidates were reminded of the rules of conduct. No variation from the examination administration was allowed unless a test accommodation had been granted by the NDEB.

Exam Administration Staff

Third-Party Test Centres

Each test centre had a designated proctor who was employed by the third party. The proctor's primary responsibility was to ensure the examinations were administered according to NDEB procedures.

NDEB staff were available during the examinations, by phone, to assist proctors with registration issues and misconduct. They were also available to assist the third-party command centre staff in addressing issues such as permissions, exam authorization problems, technology issues, and emergency situations.

NDEB-Run Test Centre

NDEB-run test centres had one or more designated Chief Invigilator(s). The Chief Invigilator's primary responsibility was to ensure the examinations were administered according to NDEB procedures.

Reporting

Each proctor and/or Chief Invigilator is responsible for completing a report on the administration of the examination. The report includes any irregularities that may have disrupted the examination. The report also includes details regarding any misconduct that occurred prior to, during, or after the examination.

Test Accommodations

The purpose of test accommodations is to remove construct-irrelevant barriers that would interfere with a candidate's ability to demonstrate their competence. Accommodations may be provided for a disability, medical condition, or religious reason.

Pursuant to the NDEB By-laws and policies, test forms or administration conditions may be modified to accommodate candidates requiring test accommodations. Candidates must submit a written request prior to the registration deadline and are required to provide supporting documentation.

Accommodations may include an alternate date, separate examination room, a reader, or longer examination times. The number of requests for these types of accommodations is small, and as such, the NDEB is unable to establish the validity of these modified examination forms for this specific population.

Test accommodations represent the only allowable variations in administration conditions, and these variations are documented in detail. In recent years, the number of test accommodations has increased, and most accommodations involve no modifications to examination materials.

A list of test accommodations granted for 2024 is included in the table below.

Table 3: 2024 ACJ Test Accommodations

Accommodation	Number requested	Number granted
Private room and food permitted during exam time	1	1
Food permitted during exam time (consumed outside exam room)	2	2
Strategic seating	1	1

Part C – Scoring

Standards for Pass/Fail

It is the NDEB's statutory obligation to certify only those who are qualified to enter the dental profession in Canada. In the interest of public health, the NDEB establishes standards necessary to ensure competency.

Standard Setting

A standard setting meeting for the ACJ was held in May 2024, after the May examination, to review performance-level descriptors and cut scores. Twelve subject matter experts were involved in the standard setting process. The modified Angoff method (Angoff, 1971) was used to establish a single passing point (or "cut score") for the ACJ examination form (i.e., the score in the examination that differentiates competent from not-yet-competent performance).

A passing score was recommended by the Examinations Committee and approved by the Board in June 2024.

Passing Score

The standard reflecting the minimally-competent candidate was applied to the May 2024 examination. The passing score for subsequent ACJs was determined through statistical chain equating.

In line with national standards, the NDEB uses a standardized (rescaled) passing score of 75 for all its examinations. Rescaling the passing score has no impact on the difficulty or reliability of the NDEB's examinations.

Scoring

The ACJ items are a combination of single-answer and multi-answer multiple-choice items and have up to 15 distractors.

All items have a maximum score of 1 and a minimum score of 0.

For multi-answer multiple-choice items, the score on each question depends on whether the candidate selects all the correct answers, some of the correct answers, or an incorrect answer. Every answer in a multi-answer multiple-choice item has a value. If the candidate selects all the correct answers and no incorrect answers, they receive the full mark for the item. If the candidate selects an incorrect answer, they receive a score of 0.

NDEB staff performed multiple quality assurance steps to ensure that the scoring was done accurately. Several scores were checked to confirm their accuracy. The answers were compared to the master answer key, and all calculations were verified.

Initial Statistical Analysis

After verification, initial results processing, and reviewing any procedural abnormalities, an initial statistical analysis was performed. Reports generated from the initial statistical analysis were produced:

- Candidate Performance by Exam Summary
- Question Performance by Exam Summary
- Exam Performance Detail
- Question Performance – Top/Low/Biserial Distribution (Condensed) (required for examinations which include multi-answer test items)
- Common Drift Analysis
- Cheating Report

Items were flagged for the following reasons:

- Difficulty: Less than 0.3
- Biserial: Less than 0.05 (unless the difficulty is greater than 0.95)

Review and Final Statistical Analysis

Reports generated from the initial statistical analysis were provided to the Chief Examiner and/or Assistant Chief Examiner, and other examiners in a statistical review meeting. At least one examiner was a member of the Ordre des dentistes du Québec (ODQ). Items flagged during the initial item analysis were reviewed in depth. If determined to be flawed, non-performing or compromised after review, the items were removed from further analyses.

Flagged items are reviewed to:

- confirm the accuracy of the answer key
- identify potential ambiguities, including the possibility of multiple correct answers
- identify potential "trick" items or unclear wording
- identify a possible English-French translation issue
- identify item drift as evidenced by an unusual increase or decrease in percent correct

Examiners use their expert judgement to determine if an item will be excluded and take into consideration the purpose of the question.

A final statistical analysis was performed, and results calculated with those items excluded. Results were validated by third-party psychometricians.

Equating and Rescaling

Test equating is a standardized statistical process that is used to ensure each version of an examination is of equal difficulty. In addition to the passing score, candidate scores are also rescaled. Several data quality assurance steps are taken to ensure that the equating and

rescaling is done in a fair manner while respecting the statistical assumptions that underly these mathematical procedures. The Pass or Fail scores of candidates are determined by their total score on the examination and where it falls in relation to the exam pass score. A total score equal to or greater than the pass score results in a Pass and a total score less than the pass score results in a Fail.

Pilot Testing

The NDEB embeds new questions into examinations as pilot test items. These items are new and have not been evaluated by the candidate population. They are interspersed as part of the 150 questions in the examination form. Pilot items that perform well from a statistical perspective count toward the candidate's score, while those items that do not perform well are excluded using the NDEB statistical review policy.

In addition, item statistics are used to improve items for future use. Due to the NDEB's pilot testing methodology, items are exposed to a live candidate population, which includes all relevant subgroups. The pilot questions are not identified as pilots in the exam.

Reporting

The results of the examination are posted on a secure website within eight weeks of the administration date. Candidates access their results by logging in to their online profile. When results are posted, candidates receive an email notification. If there is an anticipated delay in the release of results, candidates are notified by email. Candidates are informed if they have passed or failed the examination. Results are reported as Pass/Fail. Successful candidates are given a pass result. Candidates who fail will also receive their test equated, re-scaled score on the failed examination and the pass mark for the examination. This allows candidates to determine how close they were to passing. They are also provided with instructions on how to appeal their score.

Candidate results and records are kept pursuant to the NDEB's internal document retention policies and procedures.

Other Reporting

A general statistical performance report for the ACJ is prepared and presented to the Examinations Committee and the Board annually.

The total number of test takers and pass percentage is posted on the NDEB website annually.

All information related to the ACJ (e.g., test protocol, reports) is retained as per the document retention policy.

Appeals

The appeal mechanism for the ACJ is a verification of score. This is a verification of the grade calculations. Responses are manually compared with the answer key followed by a manual recalculation of the score.

Candidates who receive a failing grade on the ACJ can request a verification of score within one month of the release of results by applying to the Board to have their examination score verified.

A fee is charged for a score verification. Fees are posted on the NDEB website.

Other Appeals

Within a specified timeframe, candidates may petition the Board or Executive Committee in writing regarding:

- a decision of the Examinations Committee regarding misconduct
- compassionate grounds
- the conduct of the examination

A summary of appeals received for the 2024 ACJ can be found in Table 4.

Table 4: 2024 ACJ Appeals

Type of Appeal	Number received	Granted	Grades Changed
Verification of Score	139	-	0
Compassionate Appeal	-	-	-
Conduct of the Examination	2	0	-

Part D - Security

The NDEB takes several measures to ensure the security of its processes.

Credential Verification

Credential verification of applicants is performed to ensure that applicants to all processes are eligible for participation. While the credential verification process differs depending on the process applied for, each process includes source verification with the university to confirm the applicant's credentials.

Candidate Information

Candidates create an online account in the NDEB's online portal called NDEBConnect. Candidate accounts are password protected.

In-house, the NDEB has candidate information stored on secure NDEB servers. This information is only accessible to staff with valid network accounts and drive permissions.

Administration

The NDEB is in regular communication with onsite staff to keep them apprised of changes to administration processes and emphasize the importance of security measures such as standardized check-in procedures and restricted items. Chief invigilators, invigilators, and proctors are trained to identify, manage, and report misconduct.

Onsite Security

The NDEB stores all physical examination material in a secure, locked area. All electronic materials are on secure password-protected servers.

During the examinations, proctors/invigilators monitor the candidates in the examination room and document any irregularities. For NDEB-run sites, all examination materials are returned to the NDEB office. NDEB staff verify the return of all materials. These security measures help maintain the integrity of the examinations by limiting exposure to examination items before and after the administration of the examination.

For examinations at a third-party test centre, proctors use hand-held metal detector wands to scan all candidates in the test centres prior to each entry into the test room. Proctors patrol the test room regularly and monitor candidates by video. Proctors document any irregularities and communicate with the NDEB as necessary during and/or after the exam.

Exam Security

The NDEB's sensitive information is stored on a restricted server and in secure restricted databases. Examination files and applications are not accessible to all those who work for the NDEB but are limited to those users who require access.

The NDEB has a policy that written exam content under development is never sent via email. Rather, these files are uploaded to our password-protected secure sites for sharing and collaboration. Users are limited to what they can view, edit, upload, and download based on their roles.

All NDEB portable devices use encryption so no one can access anything on the device without the proper credentials.

During the examination, candidates are reminded that disclosure of confidential examination material, or engagement in any other form of cheating is unacceptable and that such behaviour may result in sanctions.

There are guidelines for the retention of test materials.

Security Analysis

During exam processing, a test analysis program is applied to the item results of all candidates. Those with extreme values are flagged for attention. In rare cases, candidates are informed that results of the examination will be delayed pending a review.

Part E - Outcomes Summary

This report provides summary information on the structure of the ACJ as well as statistical summaries at the item and test levels.

Number of Examination Items by Category

Table 5: 2024 ACJ Questions by Content Area

Blueprint Category	May 2024	Nov 2024
Pharmacotherapeutics Medically-Complex Patients Medical Emergencies	28	31
Oral Medicine/Oral Pathology Oral Surgery	41	40
Periodontics	23	19
Endodontics	14	14
Orthodontics Pediatric Dentistry	13	13
Cariology/Restorative Dentistry	21	21
Total Scored	140	138
Rejected	10	12
Total	**150**	**150**

ACJ Analysis Report

Table 6: 2024 ACJ Exams Statistical Analysis

Attempt		May 2024	November 2024
Number of Candidates	1	416	284
	2	135	114
	3	24	34
	Total	**575**	**432**
Pass (#)	1	230	172
	2	65	76
	3	11	20
	Total	**306**	**268**
Pass (%)	1	55.3	60.6
	2	48.2	66.7
	3	45.8	58.8
	Overall	**53.2**	**62.0**
Passing Raw Score (%)		**66.10**	**67.20**
Mean Raw Score (%)	1	66.4	68.4
	2	65.7	69.2
	3	65.9	68.1
	Overall	**66.2**	**68.5**
Range Rescaled	1	57 – 87	50 – 90
	2	59 – 84	67 – 88
	3	58 – 84	66 – 84
	Overall	**57 – 87**	**50 – 90**
Mean Rescaled Score	1	74.8	75.6
	2	74.1	76.4
	3	74.3	75.4
	Overall	**74.6**	**75.8**
KR 20/ Cronbach's Alpha		**0.74**	**0.77**

Note: Numbers are based on all candidates who sat the assessment. This includes candidates who have later been withdrawn as a result of a compassionate appeal.

Part F – Appendices

Appendix A – Key Supporting References

ACFD Educational Framework for the Development of Competency in Dental Programs. Association of Canadian Faculties of Dentistry. 2016

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Appendix B - Knowledge Skills and Abilities (KSAs) Framework

This document lists 43 KSAs that are required for the safe and effective practice of a beginning dental practitioner in Canada. The KSAs in this document are organized into three groups and 15 categories:

GROUP A: Multi-discipline (23 KSAs)

These KSAs apply to more than one discipline or area of practice. The KSAs in this group are organized into two categories: *Patient Assessment and Treatment Plan* and *Management*.

GROUP B: Discipline-specific (11 KSAs)

These KSAs are specific to dentistry practice in one of 9 disciplines/areas of practice: *Oral Medicine and Pathology*, *Radiology*, *Periodontics*, *Endodontics*, *Prosthodontics*, *Orthodontics*, *Operative*, *Oral Surgery*, and *Pain*.

GROUP C: General (9 KSAs)

The KSAs are organized into four categories: *Scientific Literature*, *Communication*, *Professionalism and Practice*, and *Health Promotion*.

GROUP A: Multi-Discipline KSAs

1	**Patient assessment and treatment plan**
1.1	**Exam**
1.1.1	Obtain the patient's chief complaint, medical, psychosocial, and dental histories.
1.1.2	Perform a clinical examination.
1.1.3	Assess patient-specific risk factors for oral disease or injury.
1.2	**Diagnosis**
1.2.1	Differentiate between normal and abnormal hard and soft tissues of the maxillofacial complex.
1.2.2	Interpret the findings from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests.
1.2.3	Develop a problem list and establish diagnoses.
1.3	**Treatment Plan**
1.3.1	Determine when consultation, referral, and/or further diagnostic testing are indicated.
1.3.2	Communicate relevant patient information for consultation/referral with health care professionals.
1.3.3	Develop treatment options based on the evaluation of all relevant data (i.e., obtained from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests).
1.3.4	Engage the patient in the discussion of the findings, diagnoses, etiology, risks, benefits, time requirements, costs, responsibilities, and prognoses of the treatment options.
1.3.5	Develop a comprehensive, prioritized and sequenced treatment plan.
1.3.6	Obtain and record informed consent.
2	**Management**
2.1	**Prevention**
2.1.1	Promote measures to prevent oral disease/injury in response to identified risk.
2.1.2	Provide therapies for the prevention of oral disease/injury.
2.1.3	Implement measures to prevent medical emergencies from occurring in dental practice.
2.1.4	Implement measures to prevent the transmission of infectious diseases.

2.2	Treatment
2.2.1	Manage the anxious or fearful patient.
2.2.2	Manage dental emergencies.
2.2.3	Manage medical emergencies that occur in dental practice.
2.2.4	Manage trauma to the orofacial complex.
2.2.5	Manage occlusal function.
2.2.6	Prescribe and administer pharmacotherapeutic agents used in dentistry.
2.2.7	Manage complications, outcomes and continuity of care.

GROUP B: Discipline-Specific KSAs

3	Oral medicine and pathology
3.1	Manage oral mucosal and osseous diseases.
4	**Radiology**
4.1	Prescribe, make and interpret radiographs.
5	**Periodontics**
5.1	Manage conditions and diseases of the periodontium.
6	**Endodontics**
6.1	Manage diseases and injury of the pulp.
7	**Prosthodontics**
7.1	Manage partially and completely edentulous patients.
8	**Orthodontics**
8.1	Manage abnormalities of orofacial growth and development.
9	**Operative**
9.1	Restore carious lesions and manage other defects in teeth.
10	**Oral surgery**
10.1	Manage surgical procedures related to oral soft and hard tissues.

11	Pain
11.1	Achieve local anesthesia for dental procedures.
11.2	Manage odontogenic pain.
11.3	Manage non-odontogenic pain.

GROUP C: General KSAs

12	Scientific literature
12.1	Evaluate the scientific literature and justify management recommendations based on the level of evidence available.
13	**Communication**
13.1	Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public.
14	**Professionalism and practice**
14.1	Know ethical and legal obligations (e.g., confidentiality requirements, task delegation, commitment to continued professional development, patient-centred care).
14.2	Maintain accurate and complete patient records.
14.3	Manage occupational hazards related to the practice of dentistry.
14.4	Take appropriate action when signs of abuse and/or neglect are identified.
14.5	Know principles of practice administration, financial and personnel management.
15	**Health promotion**
15.1	Recognize the determinants (influencing factors) of oral health.
15.2	Promote oral health within communities.

Appendix C – Publications

Boyd, M. A., Gerrow, J. D., Chambers, D. W., & Henderson, B. J. (1996). Competencies for dental licensure in Canada. *Journal of Dental Education*, *60*(10), 842–846.

Boyd, M. A., & Gerrow, J. D. (1996). Certification of competence: a national standard for dentistry in Canada. *Journal (Canadian Dental Association)*, *62*(12), 928–930.

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Chambers, D. W., & Gerrow, J. D. (1994). Manual for developing and formatting competency statements. *Journal of Dental Education*, *58*(5), 361–366.

Charbonneau, A., Walton, J. N., Morin, S., & Dagenais, M. (2019). Association of Canadian Faculties of Dentistry Educational Framework for the Development of Competency in Dental Programs. *Journal of Dental Education*, *83*(4), 464–473. https://doi.org/10.21815/JDE.019.045

Davis-Becker, S. S., Buckendahl, C. W., & Gerrow, J. (2011). Evaluating the Bookmark standard setting method: The impact of random item ordering. *International Journal of Testing*, *11*(1), 24–37. https://doi.org/10.1080/15305058.2010.501536.

Gerrow, J. D., Boyd, M. A., Doyle, G., & Scott, D. (1996). Clinical evaluation in prosthodontics: practical methods to improve validity and reliability at the undergraduate level. *The Journal of Prosthetic Dentistry*, *75*(6), 675–680. https://doi.org/10.1016/s0022-3913(96)90256-5

Gerrow, J. D., Boyd, M. A., Duquette, P., & Bentley, K. C. (1997). Results of the National Dental Examining Board of Canada written examination and implications for certification. *Journal of Dental Education*, *61*(12), 921–927.

Gerrow, J. D., Chambers, D. W., Henderson, B. J., & Boyd, M. A. (1998). Competencies for a beginning dental practitioner in Canada. *Journal (Canadian Dental Association)*, *64*(2), 94–97.

Gerrow, J. D., Boyd, M. A., Donaldson, D., Watson, P. A., & Henderson, B. (1998). Modifications to the National Dental Examining Board of Canada's certification process. *Journal (Canadian Dental Association)*, *64*(2), 98–103.

Gerrow, J. D., Boyd, M. A., Scott, D. A., & Boulais, A. P. (1999). Use of discriminant and regression analyses to modify a clinical certification board examination. *Journal of Dental Education*, *63*(6), 459–463.

Gerrow, J. D., Murphy, H. J., Boyd, M. A., & Scott, D. A. (2003). Concurrent validity of written and OSCE components of the Canadian dental certification examinations. *Journal of Dental Education*, *67*(8), 896–901.

Gerrow, J. D., Boyd, M. A., & Scott, D. A. (2003). Portability of licensure in Canada based on accreditation and certification. *The Journal of the American College of Dentists*, *70*(1), 8–10.

Gerrow, J. D., Murphy, H. J., Boyd, M. A., & Scott, D. A. (2006). An analysis of the contribution of a patient-based component to a clinical licensure examination. *Journal of the American Dental Association*, *137*(10), 1434–1439. https://doi.org/10.14219/jada.archive.2006.0057

Gerrow, J. D., Murphy, H. J., & Boyd, M. A. (2006). Competencies for the beginning dental practitioner in Canada: a validity survey. *Journal of Dental Education*, *70*(10), 1076–1080.

Gerrow, J. D., Murphy, H. J., & Boyd, M. A. (2007). Review and revision of the competencies for a beginning dental practitioner in Canada. *Journal (Canadian Dental Association)*, *73*(2), 157–160.

Wolkowitz, A., Davis-Becker, S., & Gerrow, J. (2016). Releasing Content to Deter Cheating: an Analysis of the Impact on Candidate Performance. *Journal Of Applied Testing Technology, 17*(1), 33-40.

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Ferdous, A., Smith, R., & Gerrow, J. (2008). Considerations for using subsets of items for standard setting. Paper presented at the annual meeting of the National Council on Measurement in Education. New York, NY.

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Gerrow, J. D., Murphy, H. J., Boyd, M. A., & Scott, D. A. (2003). Concurrent validity of written and OSCE components of the Canadian dental certification examinations. *Journal of Dental Education*, *67*(8), 896–901.